

LISTING OF CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A process for coating a substrate (1) ~~with at least one a~~ functional layer (2), comprising the steps of:

a) ~~providing the substrate (1) and the a layer starting material in a vacuum system (5), and;~~

b) ~~coating the substrate (1) with a functional layer (2) by sputtering of the layer starting material on the substrate to define a first portion of the functional layer, wherein;~~

~~b1) the sputtering of the layer starting material for coating of the substrate (1) with a functional layer (2) is interrupted interrupting the sputtering at least once to produce an intermediate layer (4) on the first portion, the intermediate layer being which is different than the functional layer and has having a thickness of [≤] less than or equal to 20 nm; and~~

~~b2) the continuing sputtering of the layer starting material is continued after the interruption the intermediate layer is produced to define a second portion of the functional layer, wherein the intermediate layer is sufficient to increase the transmittance and/or reflectance of the functional layer.~~

2. (Currently amended) The process for coating a substrate (1) as claimed in claim 1, wherein the ~~coating of the substrate (1) by means of a functional layer (2) is realized by means of sputtering comprises magnetron sputtering of the layer starting material.~~

3. (Cancelled)

4. (Currently amended) The process for coating a substrate ~~(1)~~ as claimed in ~~one of the preceding claims, wherein claim 1, further comprising repeating the sputtering, interrupting, and continuing steps so that a plurality of functional layers (2)~~ are applied, ~~in particular as an alternating layer system made up of comprising a first functional layers (2) with a low refractive index and a second functional layers (2) with a high refractive index.~~

5. (Currently amended) The process for coating a substrate ~~(1)~~ as claimed in claim 4, wherein the first functional layers ~~(2) with a low refractive index are interrupted by sputtering has a first intermediate layers (4) with a high refractive index and/or the second functional layers (2) with a high refractive index are interrupted by sputtering has a second intermediate layers (4) with a low refractive index, the intermediate layers remaining below a thickness at which they become optically active, preferably ≤ 10 nm.~~

6. (Currently amended) The process for coating a substrate ~~(1)~~ as claimed in claim 5, wherein the first functional layers ~~(2) with a low refractive index and the second intermediate layers (4) with a low refractive index consist of SiO<sub>2</sub> by virtue of silicon being sputtered in a reactive atmosphere, and the second functional layers (2) with a high refractive index and the first intermediate layers (4) with a high refractive index consist of ZrO<sub>2</sub> by virtue of zirconium being sputtered in a reactive atmosphere.~~

7. (Currently amended) The process for coating a

substrate (1) as claimed in one of claims 1 to 3 claim 1, wherein the layer starting material comprises a pure metal target layer is applied as functional layer (2) by sputtering a metal.

8. (Currently amended) The process for coating a substrate (1) as claimed in claim 7, wherein the interruption to the sputtering of the functional layer (2) is effected by interrupting step comprises introducing an oxygen-rich microwave plasma into the vacuum chamber, with an intermediate layer (4) consisting of metal oxide by virtue of the so that a surface of the first portion of the functional layer (2) of metal which has previously been grown being is oxidized.

9. (Currently amended) The process for coating a substrate (1) with a functional layer (2) as claimed in claim 8, wherein the functional layer (2) is applied by sputtering pure metal target comprises chromium.

10. (Currently amended) The process for coating a substrate (1) as claimed in one of the preceding claims, wherein the claim 1, further comprising locating a plurality of substrates (1), on a drum (7) located inside the vacuum chamber[[],] and rotating the drum so that the plurality of substrates rotate past a plurality of targets (10, 11, 12) comprising the layer starting material and an oxygen source (8).

11. (Currently amended) A coated substrate ~~(1)~~ having comprising:

~~at least one functional layer ~~(2)~~ formed from of a metal, wherein the functional layer ~~(2)~~ has; and~~

~~at least one intermediate layer ~~(4)~~ of a metal oxide which interrupts it and is ≤ the at least one functional layer and has a thickness that is less than or equal to 10 nm thick;~~

12. (Currently amended) The coated substrate ~~(1)~~ as claimed in claim 11, wherein the at least one functional layer ~~(2)~~ is a chromium layer.

13. (Currently amended) The coated substrate ~~(1)~~ as claimed in ~~one of claims 11 and claim 12~~, wherein the ~~interrupting at least one intermediate layer ~~(4)~~ of a metal oxide is a~~ at least one chromium oxide layer.

14. (Cancelled)

15. (Currently amended) The coated substrate as claimed in ~~one of claims 11 to 14, which~~ claim 11, wherein the coated substrate is used as a substrate for lithographic processes.

16. (Currently amended) A coated substrate ~~(1)~~ having comprising:

~~at least one functional layer ~~(2)~~ of a metal oxide, wherein the functional layer ~~(2)~~ has; and~~

~~at least one intermediate layer ~~(4)~~ of a metal oxide which interrupts it the at least one functional layer and remains below a thickness at which it the at least one intermediate layer is optically active.~~

17. (Currently amended) The coated substrate (1) as claimed in claim 16, ~~which wherein the at least one functional layer~~ comprises an alternating layer system made up of a first functional layers with a high refractive index and a second functional layers with a low refractive index.

18. (Currently amended) The coated substrate (1) as claimed in claim 17, wherein the second functional layer (2) ~~with a low refractive index consists of is formed from~~ SiO<sub>2</sub> and the first functional layer (2) ~~with a high refractive index consists of is formed from~~ ZrO<sub>2</sub>.

19. (Currently amended) The coated substrate (1) as claimed in claim 18, wherein the interrupting at least one intermediate layer (4) ~~of a metal oxide in a the first~~ functional layer (2) ~~with a high refractive index formed from~~ ZrO<sub>2</sub> is an intermediate layer (4) ~~with has~~ a low refractive index formed from SiO<sub>2</sub>, and the at least one interrupting intermediate layer (4) ~~of a metal oxide in a the second~~ functional layer (2) ~~with a low refractive index formed from SiO<sub>2</sub> is an intermediate layer (4) with has~~ a high refractive index formed from ZrO<sub>2</sub>.

20. (Cancelled)

21. (Currently amended) The coated substrate as claimed in ~~one of claims 16 to 20, which claim 16, wherein the coated substrate~~ is used as an optical element.

22. (Currently amended) The coated substrate as claimed in claim 21, ~~which is used as wherein the optical element is a~~ color filter.

23. (Currently amended) The coated substrate as claimed in  
~~one of claims 11 to 22~~ claim 16, wherein the at least one  
functional layer is an optical functional layer.

24. (New) The process for coating a substrate as claimed  
in claim 5, wherein the first and second intermediate layers  
have a thickness of less than or equal to 10 nm.